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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,066	02/13/2006	Wataru Iijima	286003US0PCT	7464

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EXAMINER	
HINES, LATOSHA D	

ART UNIT	PAPER NUMBER
4112	

NOTIFICATION DATE	DELIVERY MODE
08/21/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/568,066	IIJIMA ET AL.	
	Examiner	Art Unit	
	LATOSHA HINES	4112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/13/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This is the initial Office action based on the 10/568066 application filed on February 13, 2006.

2. Claims 1-6 are pending and have been fully considered.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claim 6 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by **SAKA (US 2006/0025620)**.

With respect to claim 6 **SAKA** discloses a the method for producing a fatty acid alkyl ester composition capable of being utilized effectively as a diesel fuel (particularly bio-diesel fuel) by treating fats and oils containing a fatty acid glyceride and/or fatty acid (paragraph 0018-0019). The "fats and oils" means those containing a fatty acid glyceride and/or fatty acid as described above

contain a main component called fatty acid mono-glyceride, fatty acid di-glyceride, fatty acid tri-glyceride.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over **SAKA (US 2006/0025620)**.

With respect to claims 1 and 2 **SAKA** discloses the method for producing a fatty acid alkyl ester composition capable of being utilized effectively as a diesel fuel (particularly bio-diesel fuel) by treating fats and oils containing a fatty acid glyceride and/or fatty acid (paragraph 0018-0019). Alcohol (preferably methanol) and/or water, which works as an acid catalyst (paragraph 0022) are allowed to co-exist with the above mentioned fats and oils and the reaction is conducted under conditions of a temperature of 100 ºC to 370 ºC and a pressure of 1 to 100 MPa for up to 20 minutes (paragraph 0017 and 0021). **SAKA** discusses the removal of the unreacted methanol and water and by-product of glycerin from the hydrolysis of tri-glyceride and esterfication of a fatty acid. **SAKA** conducted various tests that included three different embodiments with five different examples. In Example 5, the esterification and transesterification of a fatty acid

is conducted. For the transesterification a rapeseed oil is used at a reaction temperature of 300 ºC and 350 ºC for 15 minutes. Table 8 shows the results:

TABLE 8

Alcohol	Critical temperature (° C.)	Critical pressure (Mpa)	Pressure in example (MPa) 300° C.	350° C.
Methanol	239	8.09	29	43
Ethanol	243	6.38	15	25
1-propanol	264	5.06	10	23
1-butanol	287	4.90	9	23
1-octanol	385	2.86	6	19

with the temperature at 350 ºC and the pressure at 43 MPa for the reaction of a rapeseed oil and methanol It is obvious to one of ordinary skill the results will vary when used at higher temperatures and pressures for a shorter amount of time which causes the catalyst to degrade at a faster rate. The discovery of an optimum value of a known result effective variable, without producing any new or unexpected results, is within the ambit of a person of ordinary skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (See MPEP 2144).

With respect to claim 3 **SAKA** discloses an example of esterification of a fatty acid group and transesterification of rapeseed oils occurring parallel to each reaction. Table 7 shows the result:

TABLE 7

Example	Alcohol/fats and oils (mole ratio)	Fats and oils	Alcohol	Temperature (° C.)	Pressure (Mpa)	Reaction time (min)	Yield (%)
Example 5-1	42/1	C_{18-3}	Methanol	300	20	8	96.2
Example 5-2	42/1	C_{18-2}		300	20	8	93.1
Example 5-3	42/1	C_{18-1}		300	20	8	95.8
Example 5-4	42/1	C_{18-0}		300	20	8	94.7
Example 5-5	42/1	C_{16-0}		300	20	8	94.0
Example 5-6	42/1	Rapeseed oil		300	20	15	98.0
Example 5-7	42/1	Rapeseed oil		350	43	4	98.0
Example 5-8	42/1	C_{18-3}	Ethanol	300	15	12	94.8
Example 5-9	42/1	C_{18-2}		300	15	14	97.4
Example 5-10	42/1	C_{18-1}		300	15	14	93.9
Example 5-11	42/1	C_{18-0}		300	15	15	91.2
Example 5-12	42/1	C_{16-0}		300	15	14	91.7
Example 5-13	42/1	Rapeseed oil		300	15	45	96.7
Example 5-14	42/1	Rapeseed oil		350	25	10	97.1
Example 5-15	42/1	C_{18-3}	1-propanol	300	10	15	97.0
Example 5-16	42/1	C_{18-2}		300	10	14	92.7
Example 5-17	42/1	C_{18-1}		300	10	14	92.3
Example 5-18	42/1	C_{18-0}		300	10	14	89.6
Example 5-19	42/1	C_{16-0}		300	10	14	90.1
Example 5-20	42/1	Rapeseed oil		300	10	45	96.1
Example 5-21	42/1	Rapeseed oil		350	23	14	98.8
Example 5-22	42/1	C_{18-3}	1-butanol	300	9	15	97.3

TABLE 7-continued

Example	Alcohol/fats and oils (mole ratio)	Fats and oils	Alcohol	Temperature (° C.)	Pressure (Mpa)	Reaction time (min)	Yield (%)
Example 5-23	42/1	C_{18-2}		300	9	14	92.4
Example 5-24	42/1	C_{18-1}		300	9	14	86.1
Example 5-25	42/1	C_{18-0}		300	9	14	82.5
Example 5-26	42/1	C_{16-0}		300	9	14	81.1
Example 5-27	42/1	Rapeseed oil		300	9	45	87.1
Example 5-28	42/1	Rapeseed oil		350	23	14	95.3
Example 5-29	42/1	Rapeseed oil	1-octanol	300	6	45	68.7
Example 5-30	42/1	Rapeseed oil		350	19	20	90.7

C_{16-0}: palmitic acid,
C_{18-0}: stearic acid,
C_{18-1}: oleic acid,
C_{18-2}: linoleic acid,
C_{18-3}: linolenic acid

It is obvious to one of ordinary skill the results will vary when used at higher temperatures and pressures for a shorter amount of time which causes the catalyst to degrade at a faster rate. The discovery of an optimum value of a known result effective variable, without producing any new or unexpected results, is within the ambit of a person of ordinary skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (See MPEP 2144).

With respect to claim 4 **SAKA** discloses a fatty acid and methanol under conditions of volume ratio, temperature, and pressure. Table 5 shows results:

TABLE 5

Example	Fatty acid	Fatty acid (ml)/ methanol (ml)	Temperature (° C.)	Pressure (Mpa)	Reaction time (min)	Yield (%)
Example 3-1	C_{16-0}	0.91:4.09	270	17	20	90
Example 3-2	C_{16-0}	0.91:4.09	300	24	7	88
Example 3-3	C_{16-0}	0.91:4.09	350	43	4	75
Comparative example 3-1	C_{16-0}	0.91:4.09	400	75	2	92
Example 3-4	C_{18-0}	0.91:4.09	270	17	20	98
Example 3-5	C_{18-0}	0.91:4.09	300	24	7	98
Example 3-6	C_{18-0}	0.91:4.09	350	43	4	100
Comparative example 3-2	C_{18-0}	0.91:4.09	400	75	2	100
Example 3-7	C_{18-1}	0.91:4.09	270	17	20	98
Example 3-8	C_{18-1}	0.91:4.09	300	24	7	98
Example 3-9	C_{18-1}	0.91:4.09	350	43	4	98
Comparative example 3-3	C_{18-1}	0.91:4.09	400	75	2	94
Example 3-10	C_{18-2}	0.91:4.09	270	17	20	98
Example 3-11	C_{18-2}	0.91:4.09	300	24	7	98
Example 3-12	C_{18-2}	0.91:4.09	350	43	4	87

with the fatty acid (ml)/ methanol (ml) ration of 0.91 to 4.09. It is obvious to one of ordinary skill the results will vary when used at higher temperatures and pressures for a shorter amount of time which causes the catalyst to degrade at a faster rate. The discovery of an optimum value of a known result effective variable, without producing any new or unexpected results, is within the ambit of a person of ordinary skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (See MPEP 2144).

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over **SAKA (US 2006/0025620)** in view of **SIE et al. (US4,868,221)**.

With respect to claim 5 **SAKA** does not disclose a methanolysis reaction carried out in a Hastelloy reaction tube.

However, with respect to claim 5 **SIE et al.** discloses a process for the preparation of methanol which comprises contacting gaseous mixtures comprising of carbon monoxide and hydrogen with a catalytic system prepared by a nickel salt, an alcohol, and a hydride alkali metal (column 1 lines 39-49). The methanol produced may be used for a variety of purposes such as: manufacture of synthetic gasoline, as a fuel component, and for the production of methyl tert-butyl ether (column 4 lines 1-5). The experiment was carried out in a 300 mL Hastelloy C autoclave with sodium hydride used as a suspension in white paraffin oil (column 4 lines 28-35).

At the time of the invention it would have been obvious to one of ordinary skill in the art to add a Hastelloy reaction tube invention of **SAKA**. The motivation to do so is the Hastelloy reaction tube helps in temperature control and pressure as taught by **SIE et al.** (column 4 lines 36-56).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicants disclosure.

The reference **HAAS et al. (US 6,399,800)** discloses achieving highly efficient fatty acid alkyl ester synthesis using soapstock (from crude vegetable oils) or other mixtures of vegetable lipids (column 3 lines 5-17).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LATOSHA HINES whose telephone number is (571)270-5551. The examiner can normally be reached on Monday thru Thursday and alternate Fridays from 8 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Barbara Gilliam can be reached on 571-272-1330. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Brian Sines/
Primary Examiner, Art Unit 1797